ZAGREBENYUK, S.D.; GUREVICH, S.M., [illegible] tekhn. nauk, rukovoditel' raboty

Investigating the double arc welding under flux of thick titanium. Avtom. svar. 17 no.7:44-49 Jl '64. (MIRA 17:8)

1. Institut elektrosvarki im. Ye.O. Patona AN UkrSSR.

L 32442-65 EWT(m)/EPF(c)/EPF(n)-2/EWP(v)/EPR/T/EWP(t)/EWP(k)/EWP(b) Pr-4/Pr-4/Ps-4/Pu-4 IJP(c) MJW/JD/ HM

ACCESSION NR: AP4047233 S/0125/64/000/010/0087/0088

AUTHOR: Zinuba, I.I. (Candidate of technical sciences); Gurevich, S.M. (Doctor of technical sciences); Blashchuk, V. Ye. (Engineer)

TITLE: Welding titanium with a melting electrode in inert gases with power from a VS-1000-2 rectifier

SOURCE: Avtomaticheskaya svarka, no. 10, 1964, 87-88

TOPIC TAGS: titanium welding, titanium alloy welding, melting electrode, seam welding, electric welding

ABSTRACT: Certain peculiarities of titanium welding with a melting electrode in argon, helium and mixtures of these gases have been studied. Power source requirements were determined and a source developed. A great deal of spattering of the metal is observed with a forward source potential. Welding with reverse potential is distinguished by high stability and thus is preferred. The VS-1000-2 rectifier was developed especially for mechanized forms of welding, especially under helium. Mechanical properties of weld seams of complex titanium alloy AT-3 made with AT-3Sv wire are tabulated and proved to be practically equal to those of the base material. Orig. art. has: 2 tables and 1 figure.

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L 32442-65
ACCESSION NR: AP4047233

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: IE

NO REF SOV: 000 OTHER: 000

Card 2/2

GUREVICH, S.M., doktor tekhn. nauk; BOSAK, L.K., inzh.

Effect of calcium flouride on the technological properties of AN-T fluxes. Avtom. svar. 17 no.11:47-50 N '64 (MIRA 18:1)

1. Institut elektrosvarki imeni Ye.O. Patona AN UkrSSR.

L 41246-65 EPA(s)-2/EWT(m)/EPF(c)/EWA(d)/EWP(v)/T/EWP(t)/EWP(k)/EWP(b)/EWA(c) Pf-4 IJP(c) JD/EM/JT/WB

ACCESSION NR: AP500[illegible] S/0125/64/000/011/0092/0093

AUTHOR: Gurevich, [illegible]; [illegible]; Yagupol'skaya, L. [illegible]; Kamenskaya, Ye. A.

TITLE: Corrosion resistance of weld joints of titanium alloys containing 0.1 and 0.2% Pd

SOURCE: Avtomaticheskaya svarka, no. 11, 1964, 92-93

TOPIC TAGS: titanium, titanium alloy, palladium metal welding, corrosion resistance, hydrochloric acid

ABSTRACT: Owing to the naturally high corrosion resistance of titanium in many corrosive media its use in chemical machinery is continuously expanding. A great many investigations have been carried out in the last few years on the applications of titanium. The problem of further improving its corrosion resistance was solved by alloying it with various elements. It was found that palladium was one of the most effective additives. Addition of 0.1 to 0.2% palladium to titanium significantly increases the stability of the metal to sulfuric and hydrochloric acids as well as other media.

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APPROVED FOR RELEASE: 03/20/2001 CIA-RDP86-00513R000617420015-5"

Until recently no studies have been made of the behavior of welds made of such an alloy in agressive media, and furthermore there is little basis for recommending this alloy for welding chemical equipment.

The Institute of Electric Welding imeni Ye. O. Paton /Ukrainian Academy of Sciences/ has investigated the corrosion resistance of welds made of titanium alloyed with 0.1 and 0.2% palladium, as well as type VT4 alloy containing 0.2% Pd in boiling dilute solutions of hydrochloric acid. Plates 1.5 mm thick were welded in an argon chamber with a nonconsumable electrode. The welding conditions were: I_w = 100 to 120 amp, U_d = 10 to 12 volts, V_w = 25 m/hr. Test plates were 25 X 15 X 1.5 mm; test media were 1.0, 1.5, 2.5, and 5.0% solutions of boiling hydrochloric acid. It should be noted that technical-grade titanium at 100°C is stable in hydrochloric acid concentrations not exceeding 0.5%.

Alloying titanium with 0.1 to 2.0% Pd does not noticeably alter the structure of the seam. As for the base material, palladium in the studied quantities has little affect on the mechanical properties of weld joints: the yield point does not rise by more than 5 to 6% and the ductility remains the same as for unalloyed welds.

The corrosion resistance of alloys with 0.1 and 0.2% Pd and their compounds was found to be high to boiling 1.0, 1.5 and 2% solutions of HCl,

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ACCESSION NR: AP5009175

(not more than 0.04 mm/year) Type OT4 alloy with 0.2% Pd and its weld joints are stable only to a 1% boiling solution of HCl; in a 1.5, 2.0 and 2.5% solution of HCl the corrosion rate reaches 0.2 mm/year. Alloys with 0.1 and 0.2% Pd are stable in a 2.5% boiling HCl, but their weld seams are less stable because of the extensive disorder of the metal in the seam and heat-affected zone. A boiling 5% solution of HCl deteriorates the alloys and their weld joints still more, and the latter to an even greater degree. It should be noted in the corrosion tests made on the alloys and their weld seams in boiling 2.5 and 5% HCl that in many cases the corrosion rate is not duplicated in identical samples. Thus, we may say that titanium alloys with 0.1 and 0.2% Pd and their weld joints are resistant to boiling solutions of hydrochloric acid of up to 2% concentration. In 2.5% HCl solutions these alloys maintain their passive state, which in individual instances breaks down. In 5% solutions of HCl weight losses are greater and the breakdown of the passive state is observed more frequently.

The OT4 alloy with 0.2% Pd is resistant only to boiling 1% HCl; a further increase in concentration accelerates corrosion appreciably. In active corrosion processes of weld joints, a deterioration of the weld metal is observed primarily in the heat-affected zone. This indicates that 0.1 and

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ACCESSION NR: AP5009175

0

0.2% Pd in the weld, having a coarse-grain structure of the cast metal, is not as effective as in the base metal-rolled alloy. Special measures must be worked out to increase the corrosion resistance of weld joints made of the alloys of the type examined here. Orig. art. has: 3 figures.

ASSOCIATION: none

SUBMITTED: 00	ENCL: 00	SUB CODE: MM, IE
NO REF SOV: 000	OTHER: 000	JPRS

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L 43620-65 EWT(n)-2/EPR/EPA(s)-2/EWT(m)/EWP(b)/T/EWA(d)/EWP(w)/EWP(v)/EWP(t)/
EWP(k)/EWP(z)/EWA(c) LIP(c) WW/WW/JD/JG/ S/0000/64/000/000/0148/0158
GS

ACCESSION NR: AT5008304

AUTHOR: Gurevich, S.M. (Doctor of technical sciences)

TITLE: Special features in welding high-strength titanium alloys

SOURCE: AN UkrSSR. Institut elektrosvarki. Novyye problemy svarochnoy tekhniki (New problems in welding technology). Kiev, Izd-vo Tekhnika, 1964, 148-158

TOPIC TAGS: alloy welding, titanium alloy welding, high strength titanium alloy, weld seam structure, electric welding, argon arc welding, electroslag welding

ABSTRACT: One of the most important properties determining the weldability of titanium alloys is the phase composition. Either α, β (one phase) of $\alpha + \beta$ (two phase) structures may be obtained; most of them, however, are of the α or $\alpha + \beta$ types. The most important current problem is welding of β alloys to a strength up to 140 kg/mm^2. The second element in titanium alloys can be divided into three groups: α stabilizers, β stabilizers and neutral strengthening elements. In engineering alloys, titanium is used with aluminum (first group), vanadium, molybdenum, niobium, manganese, chromium, iron and copper (second group), or zirconium (third group). The first and third groups do not change the microstructure of the weld seam in comparison with the usual titanium seam. However, the quality and structure of the seam do depend on the β stabilizer

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ACCESSION NR: AT5008304

content. Besides the usual transformations connected with titanium recrystallization, other structural changes are possible. Thus, a brittle ω phase may arise due to the disintegration of the β phase. The ω phase may be formed after welding of a two-phase alloy with high β stabilizer content or after hardening and further tempering of the weld seam. The mechanical properties of the weld seam depend on the phase reactions. Thus, during tempering of hardened two-phase seams, the strength at first increases, while the plasticity drops. Further aging leads to lower strength and higher plasticity of the seam. Other methods are used for increasing the stability of seams. The type and essence of structural heterogeneity have been studied insufficiently. Electroslag welding of the titanium-aluminum-vanadium VT6 alloy indicates the formation of wide boundary layers of crystals with a high concentration of β stabilizer. It was found during tests that the maximum strength of seams, as well as hardness, is caused by the β stabilizers. Alloying elements strengthening the seam are as follows, in order: manganese, iron, chromium, molybdenum, vanadium, copper, aluminum, tin. The plastic properties [illegible] sharply with a finely dispersed α phase in the grains of the β phase. Increasing the δ phase increases the sensitivity of the alloy to changes in the welding method, and also increases the tendency to form cold cracks by hardening close to the seam zone. Argon arc welding of low-alloy thin sheets results in a seam

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ACCESSION NR: AT5008304

metal having a strength equal to that of the base metal, with satisfactory plasticity and viscosity. The use of a wire without alloys improves the plasticity of the seam, preserving its strength. Modifiers in the electrode increase the impact strength of the weld metal. Tests by the author also showed that the best modifier for titanium seams is rhenium. A titanium wire without alloys cannot be used for obtaining the required strength of the weld joint. Therefore, the same problem arises as for welding high-alloy steel -- finding the optimal chemical composition of the seam, as well as the proper phase composition. The mechanical properties for the seam metal with OT4-2 alloy of the titanium-aluminum-manganese system, 8 mm thick under a flux, are listed in a table. For some alloys, maximum density may be obtained when the seam differs from the base metal. When the titanium-aluminum-molybdenum-vanadium VT14 alloy is welded, the plastic properties are improved if the electrode wire consists of titanium-aluminum-vanadium. Orig. art. has: 7 figures and 3 tables.

ASSOCIATION: Institut elektrosvarki im. Ye. O. Patona AN UkrSSR (Electric Welding Institute, AN UkrSSR

SUBMITTED: 05Nov64 ENCL: 00 SUB CODE: IE, MM

NO REF SOV: 007 OTHER: 001

Card 3/3 pvl

L 39977-65 EPA(s)-2/EWP(k)/EWA(c)/EWT(m)/EWP(b)/T/EWP(v)/EWP(t) Pf-4 IJP(c)
JD/HW/GS

ACCESSION NR: AT4048086 S/0000/64/000/000/0283/0288

AUTHOR: Gurevich, S. M.; Zagrebenyuk, S. D.

TITLE: Double-electrode arc welding of semifinished titanium alloy parts of medium and large thickness under a flux

SOURCE: Soveshchaniye po metallurgii, metallovedeniyu i primeneniyu titani i yego splavov. 5th, Moscow, 1963. Metallovedeniye titana (Metallography of titanium); trudy soveshchaniya. Moscow, Izd-vo Nauka, 1964, 283-288

TOPIC TAGS: titanium, titanium alloy, titanium welding, titanium alloy welding, double electrode arc welding, flux welding, automatic welding

ABSTRACT: The applications of titanium alloys are being widened to the manufacture of important semifinished structures of medium and large thickness. An important problem in this connection is the flow process for welding such structures. At present, double-electrode arc welding is used for such joints. However, the method which is now used for welding steel cannot ensure high quality joints with titanium and titanium alloys. A method for automatic and semiautomatic welding under a flux has been worked out in the Institut elektrosvarki im. Ye. O. Patona

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L 39977-65

ACCESSION NR: AT4048086

AN USSR (Electric welding institute, AN UkrSSR). This new method uses two electrode wires placed one behind the other and shifted crosswise transversely at the joint axis. Tests showed that the second (rear) electrode should be located at the intersection of the tangents passing from the first electrode to the contour of the molten bath. This is illustrated in Fig. 1 of the Enclosure. Flux AN17 without oxygen is used for double-electrode arc welding. The amperage for welding should not be over 600-700 amp. The distance between the electrodes along the weld joint is 35-45 mm, and across the joint 8-12 mm. Standard multi-arc automatic welding machines, such as the DTS-24, are used. Direct current of reverse polarity is used, either from one 1000-amp generator or two separate ones. Tests of the mechanical properties of weld joints produced in this way indicate that the weld metal has the same strength as the base metal. Orig. art. has: 7 figures and 2 tables.

ASSOCIATION: None

SUBMITTED: 15Jul64 ENCL: 01 SUB CODE: IE, MM

NO REF SOV: 000 OTHER: 000

Card 2/3

L 41050-65 EPA(s)-2/EWP(k)/EWA(c)/EWT(m)/EWP(b)/T/EWA(d)/EWP(v)/EWP(t) Pf-4
IJP(c) JD/HM/HW
ACCESSION NR: AP5005616 S/0125/65/000/002/0076/0077 37 36 B

AUTHOR: Gurevich, S. M. (Doctor of technical sciences); Charchenko, G.K. (Engineer)

TITLE: New heating source for diffusion welding

SOURCE: Avtomaticheskaya svarka, no. 2, 1965, 76-77

TOPIC TAGS: welding, diffusion welding

ABSTRACT: A Soviet-made NIK-220-1000 infrared quartz iodine tungsten-filament lamp was tested as a source of heating in vacuum (10^{-4} torr) diffusion welding of titanium-alloy 25-mm-diameter 3-mm-thick tubes. At 380 v ac applied to the NIK lamp, the tubes acquired a temperature of 950—1000C in 1.5—2 min, and their welds were no different from those obtainable by the conventional h-f welding process. It is hoped that the iodine lamp will permit elimination of the complicated and expensive h-f equipment in many cases. Orig. art. has: no figures, formulas, or tables.

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L 41050-65
ACCESSION NR: AP5005616

ASSOCIATION: Institut elektrosvarki im. Ye. O. Patona AN UkrSSR (Institute of Electric Welding, AN UkrSSR)

SUBMITTED: 00 ENCL: 00 SUB CODE: MM

NO REF SOV: 000 OTHER: 000

Card 2/2

L 54828-65 EWT(d)/EPA(s)-2/EWT(m)/EWP(w)/EWA(d)/EWP(v)/T/EWA(t)/EWP(k)/EWP(z)/EWP(b)/EWA(c) Pf-4 IJP(c) MJW/JD/HW/EM

ACCESSION NR: AP5015803 UR/0129/65/000/006/0039/0043
621.791.053:621.78:669.295'292'7-1

AUTHOR: Gurevich, S. M.; Grabin, V. F. 34 43

TITLE: Heat treatment of welded joints of two-phase titanium alloys

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 6, 1965, 39-43, insert facing p. 24, and top half of insert facing p. 25

TOPIC TAGS: welding, titanium alloy, alloy welding, alloy weld, heat treatment, weld heat treatment/OT4 alloy, VT6 alloy

ABSTRACT: The structure and mechanical properties of two-phase titanium-alloy welds heat treated under various conditions have been investigated. Sheets 6—10 mm thick of titanium alloys OT 4, VT 6 and No. 1 (Ti-Al-V-Mn system) and No. 2 (Ti-Mn system) experimental alloys were submerged-arc-welded, annealed at 700—950C, quenched, and aged at 200—600C. The optimal combination of strength (120 kg/mm^2) and satisfactory ductility in VT 6 weld was obtained by annealing at 850—900C, quenching, and aging at 500—550C for 10 hr. Alloy OT 4 cannot be strengthened by heat treatment owing to the formation of the ω-phase. Orig. art. has: 7 figures and 6 tables. [ND]

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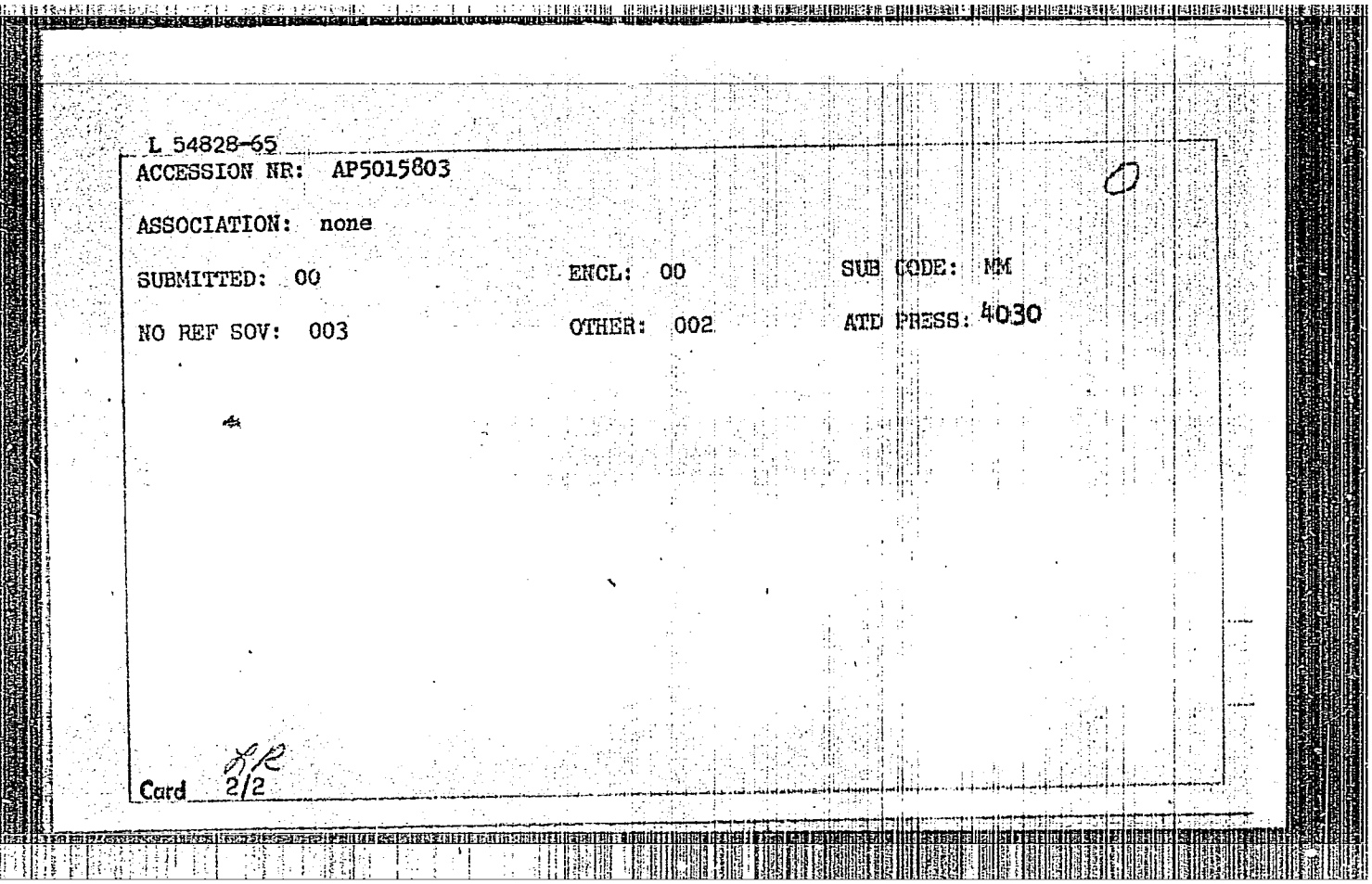

L 54828-65
ACCESSION NR: AP5015803

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: MM

NO REF SOV: 003 OTHER: 002 ATD PRESS: 4030

Card 2/2

L 1724-66 EWT(d)/EWT(m)/EWP(w)/EWA(d)/EWP(v)/T/EWP(t)/EWP(k)/EWP(h)/EWP(z)/EWP(b)/
EWP(l)/EWA(c) TIP(c) MJW/JD/HM
ACCESSION NR: AP5021224 UR/0125/65/000/008/0046/0050
621.791.7:355.66.05

AUTHOR: Gurevich, S. M. (Doctor of technical sciences); Volkov, V. B. (Engineer); Kagan, I. Z. (Engineer); Semernya, I. A. (Engineer)

TITLE: Welding of titanium chemical equipment

SOURCE: Avtomaticheskaya svarka, no. 8, 1965, 46-50

TOPIC TAGS: titanium, titanium alloy, titanium welding, alloy welding, submerged arc welding, electroslag welding/VT1 titanium, OT4 titanium alloy

ABSTRACT: The technology for submerged arc and electroslag welding of VT1 commercial-grade titanium and OT4 [U.S. RS110B] titanium alloy (the basic building materials for chemical equipment in the Soviet Union) is described. The technology, developed for the most part at the Electric Welding Institute im. Ye. O. Paton, ensures high-quality joints in parts working in aggressive media. Although electroslag and manual argon shielded arc welding are also used, automatic submerged arc welding is the basic technological process for welding longitudinal and circumferential joints in the fabrication of the components of filters, mixers, saturators, and other chemical equipment. An AN-T1 flux is used for welding titanium 8--10 mm thick; a higher

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L 1724-66

ACCESSION NR: AP5021224

melting and less fluid AN-T3 flux is used for heavier sections. A universal AN-T7 flux, the substitute for all previously used fluxes, was developed in 1961. VT1 titanium electrode wire was used in welding both VT1 titanium and OT4 titanium alloy. The welding is done with direct current and standard welding equipment. Prior to welding, rolled, extruded, or forged components are shot-blasted, pickled for 4—8 min in a solution (350 cm^3 HCl, 650 cm^3 water, and 50g sodium fluoride) at 50—60C, and degreased. For sections up to 14—16 mm thick, a square butt joint is used; for heavier sections, a V-joint with a 90 deg angle. Parts 30—35 mm thick are joined in several passes under an AN-T7 flux. For short welds, copper or steel back-up bars provide sufficient protection. However, argon backing must be used in welding long joints. Heavy rings, flanges, and similar parts are welded by the electroslag method. At the "Progress" plant (Berdichev, USSR), flanges 2260 mm in diameter consisting of seven forged VT1 segments (135 x 135 mm), and rings 800 mm in diameter from 60 x 120 mm VT1 forgings have been successfully electroslag welded in a copper, water-cooled mold with an AN-T2 oxygen-free flux in an argon atmosphere. Titanium electrode wire is annealed in a vacuum of 10^{-4} mm Hg at 800—850C to reduce the hydrogen content below 0.004% and thus to prevent cold cracking of the weld metal. The oxygen content in the wire should not exceed 0.10—0.12%. Dense, sound welds are usually obtained with a strength and corrosion resistance roughly

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L 1724-66

ACCESSION NR: AP5021224

10

equal to those of the parent metal, and also with a satisfactory ductility and toughness. Orig. art. has: 4 figures and 4 tables. [NS]

ASSOCIATION: Institut elektrosvarki im. Ye. O. Patona AN UkrSSR (Electric Welding Institute, AN UkrSSR); Penzenskiy filial NIIkhimmash (Penza Department of the NIIkhimmash); Berdichevskiy zavod "Progress" (Berdichev plant "Progress")

SUBMITTED: 06Mar65 ENCL: 00 SUB CODE: MM

NO REF SOV: 003 OTHER: 000 ATD PRESS: 4096

Card 3/3

EWT(m)/EWA(d)/EWP(t)/EWP(z)/EWP(h) IJP(c) MJW/JD

ACC NR: AP5023076 SOURCE CODE: UR/0125/65/000/009/0001/0004

AUTHOR: Gurevich, S. M. (Doctor of technical sciences); Zankov, V. N. (Engineer); Kushnirenko, N. A. (Engineer)

ORG: Electric Welding Institute im. Ye. O. Paton, AN UkrSSR (Institut electrosvarki AN UkrSSR)

TITLE: Increasing the depth of penetration in argon-shielded arc welding of titanium alloys

SOURCE: Avtomaticheskaya svarka, no. 9, 1965, 1-4

TOPIC TAGS: titanium alloy, alloy welding, TIG welding, inert gas welding, welding flux, oxygen free flux/VT15 alloy, OT4 alloy, ANT9A welding flux

ABSTRACT: Experiments have been made to determine the effect of oxygen-free fluxes on the penetration characteristics in TIG welding of titanium alloys. On the basis of the preliminary results, a complex alkali metal salt base flux AN-T9A was developed for use in argon-shielded arc welding of titanium alloys. With this flux, 6 or 3.5 mm thick VT14 alloy plates were welded in one pass with respective currents of 220 and 100 amp. Generally, the use of AN-T9A flux makes it possible to reduce the welding current for 3.5-mm thick VT15 and 4- and 6-mm thick OT4 alloys from 240, 320, and 310 to 100, 140, and 220 amp, respectively. The flux also cuts the heat input by about 60% and greatly decreases the weld width-to-height ratio (from about

Card 1/2 UDC: 621.791.856:546.821.

L 2100-66

ACC NR: AP5[illegible]3076

5.3 to 1). The structure of weld metal produced by TIG welding with AN-T9A flux is close to that produced by electron-beam welding. The VT15 alloy weld metal deposited with an AN-T9A flux had a tensile strength of 92.1 kg/mm^2 and a notch toughness of 5.8 kgm/cm^2. The corresponding figures for joints electron-beam welded and argon-shielded arc welded without the flux were 93.0 and 92.0 kg/mm^2 and 6.3 and 3.7 kg/cm^2, respectively. A similar beneficial effect of the flux on the geometry was observed in welding of niobium, molybdenum, and austenitic steels. For these metals, however, special fluxes have to be developed. Orig. art. has: 3 figures and 2 tables. [MS]

SUB CODE: MM, IE/ SUBM DATE: 08Feb65/ ORIG REF: 008/ OTH REF: 002/
ATD PRESS: 4123

Card 2/2

L 14564-66 EWT(m)/EWP(v)/T/EWP(t)/EWP(k)/EWP(b)/EWA(h) JD/JW

ACC NR: AP6002587 SOURCE CODE: UR/0286/65/000/023/0081/0081

INVENTOR: Gurevich, S. M.; Zamkov, V. N.; Zagrebenyuk, S. D.; Kushnirenko, I. A.

ORG: none

TITLE: Flux for welding light alloys such as titanium and its alloys. Class 49, No. 176789 [announced by the Electrical Welding Institute im. Ye. O. Paton AN UkrSSR (Institut electrosvarki AN UkrSSR)]

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 23, 1965, 81

TOPIC TAGS: welding, submerged arc welding, light alloy welding, titanium welding, titanium alloy welding, welding flux

ABSTRACT: This Author Certificate introduces a flux for welding light alloys such as titanium and its alloys. To improve mechanical properties and reduce the oxygen content of weld metal, the flux is composed of 83—91% calcium fluoride, 1.5—2.5% sodium chloride, and 7—15% lithium fluoride. [ND]

SUB CODE: 13/ SUBM DATE: 25Jul64/ ATD PRESS: 4189

Card 1/1

L 22350-66 EWT(m)/EWP(w)/EWA(d)/EWP(v)/T/EWP(t)/EWP(k) IJP(c) JD/HM/GS
ACC NR: AT6012406 SOURCE CODE: UR/0000/65/000/000/0301/0304

AUTHOR: Gurevich, S. M.; Kushnirenko, N. A.; Blashchuk, V. Ye.

ORG: none

TITLE: Methods of obtaining high-strength titanium welds without postwelding strengthening heat treatment

SOURCE: Soveshchaniye po metallokhimii, metallovedeniyu i primeneniyu titana i yego splavov, 6th, Novyye issledovaniya titanovykh splavov (New research on titanium alloys); trudy soveshchaniya. Moscow, Izd-vo Nauka, 1965, 301-304

TOPIC TAGS: titanium alloy, heat treatable alloy, high strength alloy, alloy welding, alloy weld, weld property

ABSTRACT: The possibility of obtaining high-strength welds in titanium alloys without postwelding heat treatment has been investigated. It was found that submerged arc welding of single-phase α-alloys of the Ti-Al-Sn-V-Zr-Fe system with an electrode of the same composition yields welds whose strength and ductility are almost equal to those of the base metal (weld tensile strength 118.4 kg/mm^2 and elongation 7.5%, versus 121.2 kg/mm^2 and 10.5% for the base metal). Welds in two-phase titanium alloys, such as VT14, made with electrode wire of the same composition have a tensile strength of 100 kg/mm^2, which can be raised by heat treatment up to 120 kg/mm^2 (the strength of heat-treated base metal). In this case, however, the

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Card 2/2 dda

L 30997-66 EWT(m)/EWP(v)/T/EWP(t)/EWP(k) IJP(c) JD/HM

ACC NR: AP6007719 (N) SOURCE CODE: UR/0413/66/000/003/0119/0119

INVENTOR: Gurevich, S. M.; Bosak, L. K.

ORG: none

TITLE: Flux for welding light metals and alloys. Class 49, No. 178660 [announced by the Institute of Electric Welding im. Ye. O. Paton, AN UkrSSR (Institut elektrosvarki AN UkrSSR)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 3, 1966, 119

TOPIC TAGS: titanium, titanium welding, submerged arc welding, welding flux

ABSTRACT: This Author Certificate introduces a flux containing CaF_2 and NaF_2 for welding light metals and alloys. For welding titanium and titanium alloys, 7% of $SrF_2 \cdot SrCl_2$ is added to a flux containing 92% CaF_2 and 1% NaF_2. [AZ]

SUB CODE: 13/ SUBM DATE: 27Nov64/ ATD PRESS: 4214

Card 1/1

L 00673-67 EWT(d)/EWT(m)/EWP(c)/EWP(v)/T/EWP(t)/ETI/EWP(k)/EWP(l) IJP(c)
JD/HM

ACC NR: AP6015251 (N) SOURCE CODE: UR/0125/66/000/005/0070/0071

AUTHOR: Bosak, L. K.; Gurevich, S. M.

ORG: Institute of Electric Welding im. Ye. O. Paton, AN UkrSSR (Institut elektrosvarki AN UkrSSR)

TITLE: Nonhygroscopic flux for welding titanium and its alloys

SOURCE: Avtomaticheskaya svarka, no. 5, 1966, 70-71

TOPIC TAGS: titanium alloy, welding flux, welding, titanium, arc welding, strontium compound, chlorine compound/AN-T11 welding flux, VT1 titanium

ABSTRACT: The fluxes used in the automatic and semiautomatic arc welding of Ti and its alloys are more or less hygroscopic, since they contain chlorides of alkali and alkali-earth metals. This harbors the danger of the contamination of the Ti and Ti-alloy weld metal with oxygen and hydrogen. Hence, the author has experimentally developed a nonhygroscopic welding flux on investigating 10 different compounds. Findings: the minimum (virtually nil) hygroscopicity is displayed by $BaF_2 \cdot BaCl_2$ and $SrF_2 \cdot SrCl_2$ compounds. Since the salts of Ba absorb x-rays and thus complicate radiographic inspection of slag inclusions in weld metal, the nonhygroscopic flux was developed on the basis of the compound $SrF_2 \cdot SrCl_2$. The compound was melted on using

Card 1/2 UDC: 621.791.04:669.295

L 00673-67

ACC NR: AP6015251

44.5 wt.% SrF_2 and 55.5 wt.% $SrCl_2$ and the flux base, on using 99 wt.% CaF_2 and 1 wt.% NaF. After this both the compound and the flux base were granulated to the required size by crushing and sieve-screening and automatically mixed in mutual proportions of 7 and 93% by weight, respectively, thus assuring a 4 wt.% content of $SrCl_2$ in accordance with the stoichiometric composition of $SrF_2 \cdot SrCl_2$. The flux obtained by this method produces satisfactory welds in the presence of welding currents of up to 600-700 a. The weld surface is lustrous, silvery, which demonstrates that the slag provides adequate protection for not only the weld pool but also the solidifying weld. This is of great significance to multi-layer welding, since it dispenses with the need to clean the surface by mechanical means every time before the next layer is deposited. This newly developed welding flux has been named AN-T11. The insignificant hygroscopicity it displays is chiefly due to the absorption of moisture at grain boundaries. When exposed to air, this flux virtually does not absorb any moisture. Tests of mechanical properties of the 10-mm thick joints of VT1 technical titanium welded with the aid of this flux produced satisfactory results. Orig. art. has: 2 figures and 1 table.

SUB CODE: 11,13,07/ SUBM DATE: 24Sep65/ ORIG REF: 002

Card 2/2 vlr

L 28075-66 EWT(m)/EWA(d)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6015252 SOURCE CODE: UR/0125/66/000/005/0072/0073

32
B

AUTHOR: Gurevich, S. M.; Podola, V. N.; Tetervak, A. F.

ORG: none

TITLE: Pulsed-arc welding of AT3 titanium alloy 21

SOURCE: Avtomaticheskaya svarka, no. 5, 1966, 72-73

TOPIC TAGS: titanium, titanium alloy, alloy welding, MIG welding, pulse welding, weld evaluation/AT3 titanium alloy

ABSTRACT: Experiments have been made with semiautomatic pulsed-power MIG welding of AT3 complex titanium alloy, the joining of which under field conditions is usually done by manual TIG welding and is particularly difficult in the vertical position. In the experiments, AT3 alloy specimens 3—5 mm thick were MIG welded in the downhand and vertical positions with an arc current of 150—300 amp at an arc voltage of 24—30 v. Powerful current pulses at a frequency rate of 50 pulses per second were superimposed on the main current. Depending on the main current, the pulse amplitude and duration were varied so as to ensure transfer of one drop of metal with each pulse. The use of superimposed current pulses improved weld formation, sharply reduced spattering, and stabilized the arc. Well-formed vertical welds were obtained at a current as low as 150 a. The weld had a fine-grained

UDC: 621.791.89:669.295

Card 1/2

L 28075-66

ACC NR: AP6015252 O

structure of the low-alloy α'-phase, a yield strength of 50.4—51.7 kg/mm^2, and a tensile strength of 62.0—62.3 kg/mm^2 as compared to 52.7 and 62.0 kg/mm^2 in welds made by conventional MIG welding. The pulsed-arc welds also had a somewhat higher elongation (19.5—21.9%) and reduction of area (55.6—58.5%) and a higher impact toughness (7.3—7.8 kg·m/cm^2) as compared with 14.4 and 53.6% and 7.5 kg·m/cm^2 in the conventional MIG welds. Thus, pulsed-arc MIG welding of titanium alloys yields high-quality welds in various positions. Orig. art. has: 1 figure and 1 table. [MS]

SUB CODE: 13/ SUBM DATE: none/ ORIG REF: 003/ ATD PRESS: 4261

Card 2/2 dc

ACC NR: AP6031726 SOURCE CODE: UR/0370/66/000/005/0169/0176

AUTHOR: Petrusevich, I. V. (Moscow); Nisel'son, L. A. (Moscow); Belyayev, A. I. (Moscow); Gurevich, M. A. (Moscow)

ORG: None

TITLE: On the problem of producing titanium silicides by simultaneous hydrogen reduction of titanium and silicon tetrachlorides

SOURCE: AN SSSR. Izvestiya. Metally, no. 5, 1966, 169-176

TOPIC TAGS: silicide, chemical reduction, titanium compound, chloride, silicon compound, metal purification

ABSTRACT: The article is a continuation of a previous paper on production of titanium silicides by simultaneous hydrogen reduction of titanium and silicon tetrachlorides (Petrusevich, I. V., Nisel'son, L. A., Belyayev, A. I., "On the Production of Titanium Silicides by Simultaneous Hydrogen Reduction of Titanium and Silicon Tetrachlorides", Izv. AN SSSR, Metally, 1965, No 5, 55-57). $TiSi_2$ was deposited on a heated Ta filament 0.7 mm in diameter under the following conditions: $SiCl_4$:$TiCl_4$ ratio in the initial vapor-gas mixture--2:1; hydrogen excess--2200%; rate of hydrogen flow--0.6 l/min and filament temperature--1190-1200°C. A dense silicide deposit was formed with a uniform diameter at a rate of 0.15 g/cm^2·hr or 0.3 mm/hr for radial growth rate. The yield of

Card 1/2 UDC: 669.295.311

L 11279-67

ACC NR: AP6031726

$TiSi_2$ was 8% which is lower than the yield in a tubular reactor by a factor of 5.5. The resultant precipitation rate in a filament reactor corresponds satisfactorily with the maximum differential precipitation rate in a tubular reactor. The results indicate that the precipitation rate is limited by the diffusion resistance of the layer adjacent to the heated precipitation surface. It is experimentally shown that the heated surface has a considerable effect on hydrogen reduction of volatile halides from the gaseous phase. Analysis showed that the precipitate had a single-phase microstructure throughout the entire length of the specimen. The silicide showed a uniform microhardness of 780 kg/mm^2 indicating a homogeneous alloy in the principal region of the precipitation zone. These data were confirmed by x-ray structural analysis. Extensive changes in the composition of the initial halide mixture result in considerably smaller variations in the composition of the precipitated alloy. Orig. art. has: 3 figures, 3 tables.

SUB CODE: 11/ SUBM DATE: 24May65/ ORIG REF: 004
07/

Card 2/2 jb

L 43956-66 EWT(m)/EWP(v)/T/EWA(c)/EWP(k)/EWP(t)/ETI IJP(c) JD/HW/AT

ACC NR: AP6027435 SOURCE CODE: UR/0125/66/000/007/0076/0076

AUTHOR: Gurevich, S. M.; Blashchuk, V. Ye.

ORG: none

TITLE: Welding OT4-2 titanium alloy

SOURCE: Avtomaticheskaya svarka, no. 7, 1966, 76

TOPIC TAGS: titanium alloy, aluminum containing alloy, manganese containing alloy, zirconium containing alloy, [redacted] welding, submerged arc welding/OT4-2 titanium alloy

ABSTRACT: The weldability of OT4-2 titanium-aluminum-manganese-zirconium alloy in submerged-arc welding has been investigated. Alloy specimens 3 mm thick were welded with VTI titanium and OT4-2 Ti2.8Al0.14Re and Ti1.6Al0.45Mn alloy electrode wires 3 mm in diameter under an oxygen-free AN-T7 flux. The best combination of strength and ductility was obtained in welds with Ti2.8Al0.14Re electrode wires. These welds had a yield strength of 89.4 kg/mm^2, a tensile strength of 93.1 kg/mm^2, an elongation of 10.6%, a reduction of area of 28.1%, a notch toughness of 4.3—5.1 mkg/cm^2, and a bend angle of 32°. Rhenium brings about a refinement of α' grains. Welds with electrode wires of the same composition as that of the parent metal had a yield strength of 95.7 kg/mm^2, a tensile strength of 107.3 kg/mm^2, an

Card 1/2 UDC: 621.791.011:669.295

L 43956-66

ACC NR: AP6027435 O

elongation of 10.5%, a reduction of area of 16.1%, a notch toughness of 4.75—5.0 mkg/cm^2, and a bend angle of 33°. Orig. art. has: 1 figure and 2 tables. [TD]

SUB CODE: 11, 13/ SUBM DATE: none/ ATD PRESS: 506/

Card 2/2 blg

L 4382-66 EWP(m)/EWP(w)/EWP(v)/T/EWP(t)/ETI/EWP(k) IJP(c) JD/AH

ACC NR: AP6030268 (A) SOURCE CODE: UR/0125/66/000/008/0018/0021

AUTHOR: Gurevich, S. M.; Grabin, V. F.; Zamkov, V. N.; Kushnirenko, N. A.

ORG: Electric Welding Institute im. Ye. O. Paton, AN UkrSSR (Institut elektrosvarki AN UkrSSR)

TITLE: Some causes of the low ductility in heat-treated VT-15 alloy welds

SOURCE: Avtomaticheskaya svarka, no. 8, 1966, 18-21

TOPIC TAGS: titanium alloy, titanium alloy welding, titanium alloy weld, weld ductility, alloy weld heat treatment, TiC_1 welding, electron beam welding, submerged arc welding/VT15 titanium alloy

ABSTRACT: The causes of low ductility in VT15 titanium alloy welds annealed and quenched after welding at 800—900C have been investigated. Alloy sheets 3.5 mm thick were joined either by submerged arc welding with ANT-7 flux, TlG welding with or without ANT-15A flux (in both cases without filler wire), or by electron beam welding. It was found that only in welds made with submerged arc did water quenching from 800—900C increase the weld impact toughness and bend angle from 1.1 mkg/cm^2 and 7° in the as-welded condition to 1.5—3.3 mkg/cm^2 and 40—73° after annealing. In all the other welds (which in general had better ductility than submerged-arc welds), annealing and quenching lowered both the notch toughness and bend angle: in T16 welds from 3.85 mkg/cm^2 and 160° to 2.8—3.0 mkg/cm^2 and 135—145°; TlG flux welds

Card 1/2 UDC: 621.791.011:669.295

L 43827-66

ACC NR: AP6030268

from 5.6 mkg/cm^2 and 180° to 3.9—5.0 mkg/cm^2 and 150—160°; and in electron-beam welds from 7.8 mkg/cm^2 and 180° to 5.5—6.0 mkg/cm^2 and 150—165°. The drop of ductility was attributed primarily to the precipitation of $TiCr_2$ at weld grain boundaries. It was concluded that VT15 welds should be aged without prior annealing. Electron-beam welds aged after annealing had a tensile strength of 114 kg/mm^2, a notch toughness of 1.6 mkg/cm^2, and a bend angle of 7—10°. Corresponding figures for welds used without annealing were 123.2 kg/mm^2, 2.1 mkg/cm^2, and 20—25°. Orig. art. has: 3 figures and 3 tables. [ND]

SUB CODE: 13/ SUBM DATE: 07Sep65/ ORIG REF: 004/ OTH REF: 005/ ATD PRESS: 5072

Card 2/2 fv

ACC NR: AP6035754 (A) SOURCE CODE: UR/0413/66/000/019/0125/0125

INVENTOR: Gurevich, S. M.; Zamkov, V. N.; Sabokar', V. K.

ORG: none

TITLE: Flux for welding titanium and titanium alloys. Class 49, No. 186841 [announced by the Electric Welding Institute im. Ye. O. Paton (Institut electrosvarki)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 19, 1966, 125

TOPIC TAGS: titanium welding, [redacted] alloy welding, welding flux, titanium alloy, TIG welding

ABSTRACT: This Author Certificate introduces a flux containing sodium and strontium fluorides and intended for use in TIG welding titanium and titanium alloys. To improve the weld quality, the flux composition is set as follows: 20—30% lithium fluoride, 1.5—20% lanthanum truoride, 20—50% strontium fluoride, and 20—30% sodium fluoride.

SUB CODE: 13/11/ SUBM DATE: 09Aug65/

Card 1/1 UDC: 621.791.048

ACC NR: AP6035755 SOURCE CODE: UR/0413/66/000/019/0125/0125

INVENTOR: Gurevich, S. M.; Zamkov, V. N.; Sabokar', V. K.

ORG: none

TITLE: Flux for welding austenitic steels. Class 49, No. 186842 [announced by the Electric Welding Institute im. Ye. O. Paton (Institut electrosvarki)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 19, 1966, 125

TOPIC TAGS: ~~stainless~~ steel welding, welding flux, stainless steel, TIG welding, austenitic steel

ABSTRACT: This Author Certificate introduces a flux containing calcium fluoride and intended for use in TIG welding austenitic steels. To improve weld quality, the flux contains 80—90% lithium fluoride and 10—20% calcium fluoride.

SUB CODE: 13/// SUBM DATE: 09Aug65/

Card 1/1 UDC: 621.791.048

ACC NR: AP7001458 (A) SOURCE CODE: UR/0413/66/000/021/0202/0202

INVENTOR: Kulikov, F. R.; Gurevich, S. M.; Anoshkin, N. F.; Moroznikova, S. V.; Blashchuk, V. Ye.; Kushnirenko, N. A.; Persidskiy, A. S.

ORG: none

TITLE: Electrode wire for titanium-alloy welding. Class 49, No. 188277

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 21, 1966, 202

TOPIC TAGS: electrode wire, titanium alloy, titanium alloy welding

ABSTRACT: This Author Certificate introduces a titanium-base electrode wire which contains 3.5—4.5% aluminum and 2.0—3.0% vanadium, with 1.4—1.6% zirconium added to improve the weld ductility. [ND]

SUB CODE: 13, 11/ SUBM DATE: 28Jul65/ ATD PRESS: 5110

UDC: 621.791.042.2

Card 1/1

ACC NR: AP7001459 (A) SOURCE CODE: UR/0413/66/000/021/0203/0203

INVENTOR: Gurevich, S. M.; Blashchuk, V. Ye.; Kulikov, F. R.; Persidskiy, A. S.; Kushnirenko, N. A.; Anoshkin, N. F.; Moroznikova, S. V.

ORG: none

TITLE: Electrode wire for welding titanium alloys. Class 49, No. 188278

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 21, 1966, 203

TOPIC TAGS: titanium alloy, ~~titanium alloy~~ metal welding, ~~titanium alloy~~ electrode ~~wire~~

ABSTRACT: This Author Certificate introduces a titanium alloy electrode wire which contains aluminum, iron, chromium, silicon, and boron. To increase the strength and ductility of welds in alloy sections up to 25 mm thick, the wire contains 1.4—1.6% zirconium while the content of other components is set as follows: 1.8—2.0% aluminum, 2.5—2.7% iron, 0.2—0.4% chromium, 0.1—0.15% silicon, and 0.05% boron. [ND]

SUB CODE: 13/ 11/ SUBM DATE: 28Jul65/ ATD PRESS: 5110

Card 1/1 UDC: 621.791.042.2

ACC NR: AP7004201 SOURCE CODE: UR/0125/67/000/001/0065/0068

AUTHOR: Gurevich, S. M.; Kompan, Ya. Yu.

ORG: Electric Welding Institute im. Ye. O. Paton, AN UkrSSR (Institut elektrosvarki AN UkrSSR)

TITLE: Electroslag welding of titanium with a consumable electrode guide

SOURCE: Avtomaticheskaya svarka, no. 1, 1967, 65-58

TOPIC TAGS: titanium, titanium alloy, ~~welding~~, titanium welding, ~~titanium alloy welding~~, electroslag welding, consumable electrode, ~~welds welding~~ WELD EVALUATION

ABSTRACT: The possibility of electroslag welding of titanium articles up to 400 mm thick with a consumable electrode guide has been investigated. Large, VT1 titanium forgings (cross section—400 x 1000 mm) were welded by this method under an AN-T2 flux. It was determined that with electrode guides 9—18 mm thick, the gap between forgings (400 mm thick) should be 32 mm, and that one electrode 5 mm in diameter should be used for each 100 mm of thickness. Argon, fed through ducts in the electrode guide directly to the welding area, eliminated almost completely the possibility of contact between molten metal and the atmosphere and resulted in a weld of high

Card 1/2 UDC: 621.791.756:669.295

ACC NR: AP7004201

quality. The plasticity and notch toughness of the weld were lower than those of the parent metal due to the coarsely crystalline structure of the cast weld-metal. The strength of the weld, however, was equal to that of the parent metal. The chemical composition of either the consumable-electrode guide or the electrodes may be varied to achieve the weld composition desired. Eight formulas for calculating their chemical compositions are given. Orig. art. has: 4 figures and 2 tables. [TD]

SUB CODE: 11, 13/ SUBM DATE: 08Feb66/ ORIG REF: 005/ ATD PRESS: 5116

Card 2/2

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

15

The technic of the application of concentrated fertilizer underneath sugar beets. S. M. Gurevich. *Mineral. Udobreniya i Insektofungisidy* **1935**, No. 3, 65-71; *Chem. Zentr.* **1936**, I, 1979-80.—Comparison was made of the usual local method of fertilizer application with the introduction of the fertilizer at the side of the young plants as would be done by a machine which simultaneously plants the seedlings and introduces the fertilizer at some distance from their roots. In plant expts. the action of Ammophos and Diammophos was found to be less efficient when applied by the first method than by the second. Superphosphate and saltpeter or $(NH_4)_2SO_4$ were equally effective when applied by either method in a spring having plentiful precipitation; in dry weather the 2nd method of application was most satisfactory. In very dry weather the usual method of application of concd. fertilizer results in killing part of the young plants. M. O. Moore

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

GUREVICH, S. M.

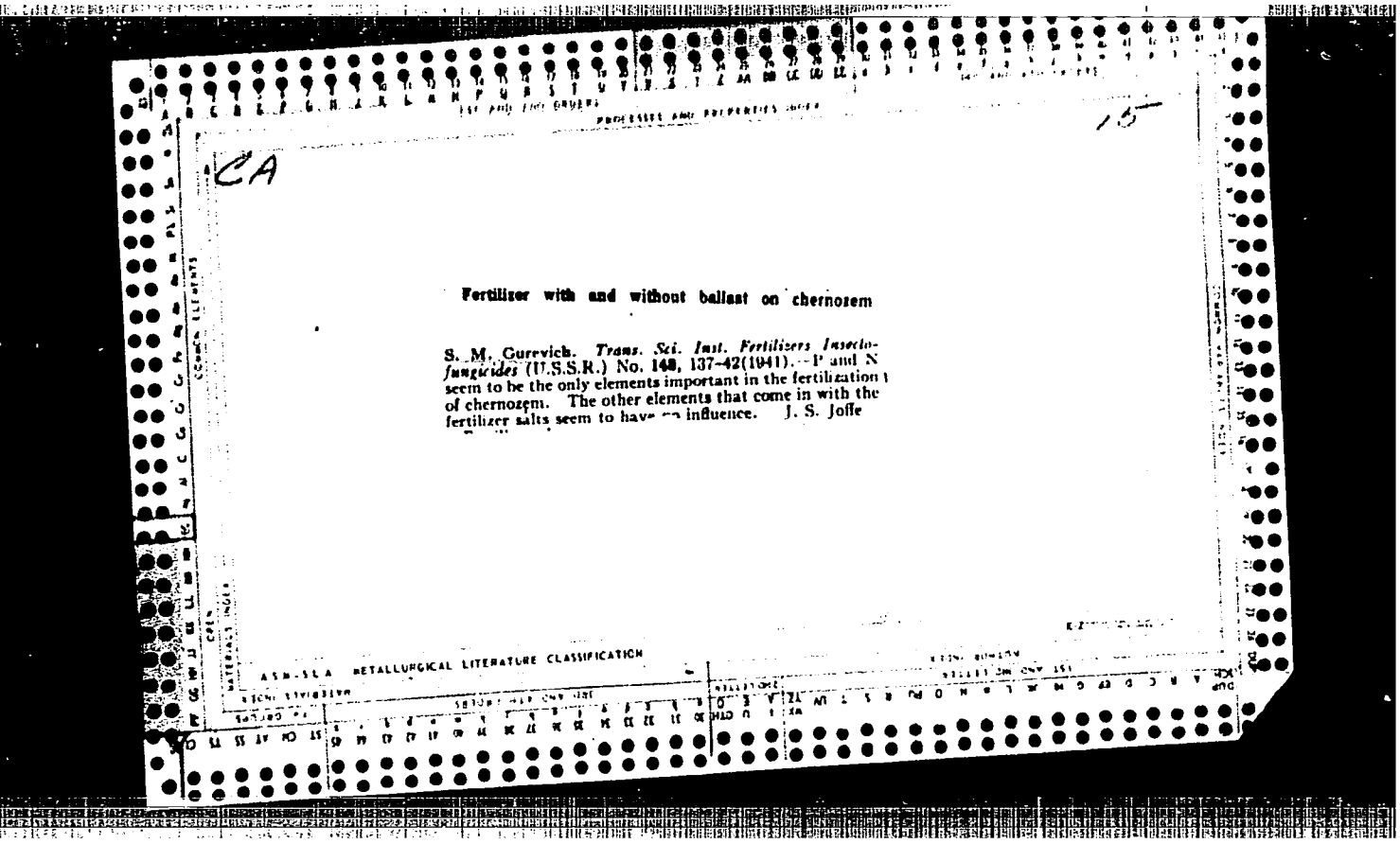
"The Action of Boron on Chernozem Soils," S. M. Gurevich, and M. V. Katalymov, Chemisation Socialistic Agr, 1940, No 11-12, pp 89-91, Khim Referat Zhur IV, No 6 pp 61 (1941)
(SEE: Inst. Insect/Fung. in Ya. V. Samoylov)

SO: U-237/49, 8 April 1949

GUREVICH, S. M.

"A Comparison of Different Forms of Phosphorus on Deep Chernozem," S. M. Gurevich, Trans Sci Inst. Fertilizers Insectofungicides (USSR), No 148, pp 55-60 (1941) (SEE: Inst. Insect/Fung. in Ya. V. Samoylov)

SO: U-237/49, 8 April 1949



CA

Fertilizer with and without ballast on chernozem

S. M. Gurevich. *Trans. Sci. Inst. Fertilizers Insecto-fungicides* (U.S.S.R.) No. 148, 137–42(1941).—P and N seem to be the only elements important in the fertilization of chernozem. The other elements that come in with the fertilizer salts seem to have no influence. J. S. Joffe

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

GUREVICH, S.M.

3233* Action of Chlorine Fertilizers on a Thick Chernozem. O deistvii khlorsoderzhashchikh udobrenii na moshchnom chernozeme. (Russian.) S. M. Gurevich. *Pochvovedenie*, 1955, no. 10, Oct., p. 12-22.

Effect of accumulation in soil; comparison with sulfate fertilizers. Tables. 14 ref.

'4565' Effectiveness of the Use of Open-Hearth Phosphate Slags as Fertilizer. Effektivnost' ispol'zovaniia martenovskikh fosfatshlakov v kachestve udobreniia. (Russian.) S. M. Gurevich. *Zemledelie*, v. 3, no. 9, Sept. 1955, p. 78-80.
Results of a two-year experiment. Tables.

Country : USSR J
Category: Soil Science. Mineral Fertilizers.

Abs Jour: RZhBiol., No 18, 1958, No 82121

Author : Gurevich, S.M.
Inst :
Title : Effect of Phosphate Fertilizer on Rich Black Earth.

Orig Pub: Udobreniye i urozhay, 1957, No 8, 16-20

Abstract: Results are presented of two experiments of several years' duration, which were conducted on the Grakovskiy Experimental Field Ukrainian SSR) on rich, moderately leached chernozem soil in an eight-field crop rotation with two fields of sugar beets, comparing the effectiveness of P_c and phosphorite fertilizer applied on a background of N against P_c in the 1st experiment under

Card : 1/2

Country : USSR J
Category: Soil Science. Mineral Fertilizers.

Abs Jour: RZhBiol., No 18, 1958, No 82121

previously planted winter wheat and directly under garden beets in two doses (90 and 120 kg to 1 hectare), and in the 2nd experiment - under garden beets, winter wheat, and barley in one and one-half and single doses. Results of the experiment showed that the action of phosphorite fertilizer on the beet crop and the effect and after-effect of it on other cultures lagged behind P only in the first rotation of the crop rotation, gradually grew, came up to, and even surpassed it in the 4th rotation. One and one-half doses of phosphorite fertilizer gave the same effect as a single dose. -- N.N. Sokolov

Card : 2/2

GUREVICH, S. M.

Doc Agr Sci - (diss) "Action of mineral fertilizers on strong chernozem." Moscow, 1961. 32 pp; (Academy of Sciences USSR, Soils Inst imeni V. V. Dokuchayev); 200 copies; free; (KL, 6-61 sup, 229)

GUREVICH, Samuil Moiseyevich; VOLLEYDT, L.P., red.; SHPAK, Ye.G., tekhn. red.

[Effect of mineral fertilizers on deep Chernozems]Deistvie mineral'nykh udobrenii na moshchnom chernozeme. Moskva, Goskhimizdat, 1962. 254 p. (MIRA 16:2)
(Chernozem soils) (Fertilizers and manures)

1. GUREVICH, Sh. M.

2. USSR (600)

4. Ships-Maintenance and Repair

7. Overhauling the fleet. Rech. transp. 12, No. 5, 1952.

9. Monthly List of Russian Accessions, Library of Congress, January 1953. Unclassified.

GUREVICH, Sh.M., kandidat ekonomicheskikh nauk

Potentialities for lowering costs in planning. Rech.transp. 14 no.7:29-30 Jl '55. (MLRA 8:10)
(Shipbuilding--Costs)

GUREVICH, Sheftel' Moiseyevich, kand.ekonom.nauk; VUL'FSON, M.S., retsenzent; DUKOR, Z.G., red.; KAN, P.M., red.izd-va; YERMAKOVA, T.T., tekhn.red.

[Technical and economic factors in major repair operations and modernization of river vessels] Tekhniko-ekonomicheskie obosnovaniia kapital'nogo remonta i modernizatsii rechnykh sudov. Moskva, Izd-vo "Rechnoi transport," 1958. 130 p. (MIRA 12:4)

(Ships--Maintenance and repair)

GUREVICH, Sh. M.

PROTASOV, Vasiliy Semenovich, SIDOROV, Pavel Petrovich, KOLOMOYTSEV, V.P. retsenzent, GUREVICH, Sh.M., retsenzent, ARSEN'YEV, S.P., red.; IVANOV, L.A., red.; LOBANOV, Ye.M. red.izd-va.; YERMAKOVA, T.T., tekhn.red.

[Economics of river transportation] Ekonomika rechnogo transporta. Moskva, Izd-vo "Rechnoi transport," 1958. 321 p. (MIRA 11:9)
(Inland water transportation)

GUREVICH, Sh.M., kand.ekon.nauk

Quality of the fleet is an important factor in lowering transportation costs. Rech.transp. 18 no.1:13-14 Ja '59. (MIRA 12:2)

(Ships) (Inland water transportation--Costs)

GUREVICH, Sh.M., kand.ekon.nauk

Increasing profit from passenger ships. Rech.transp. 18 no.10: 13-16 O '59. (MIRA 13:2)
(Volga River--Inland water transportation)

DUKOR, Zakhar Grigor'yevich; CHERTKOV, Khaim Ayzikovich; GUREVICH, Sh.M., retsenzent; KRASKOVSKIY, B.A., retsenzent; CHERTKOV, K.A., red.; KAN, P.M., red. izd-va; BODROVA, V.A., tekhn. red.

[Technical, industrial, and financial plan of a ship repair enterprise] Tekhpromfinplan sudoremontnogo predpriiatiia. Moskva, Izd-vo "Rechnoi transport," 1962. 238 p. (MIRA 16:5)
(Ships--Maintenance and repair)

MALOVA, Mariya Nikolayevna; PROKHOROV, Stepan Ivanovich; GUREVICH, Sh.M., red.; LOBANOV, Ye.M., red.

[Business accounting in parts for river transportation] Vnutriportovyi khoziaistvennyi raschet na rechnom transporte. Moskva, Transport, 1965. 61 p. (MIRA 18:7)

ACC NR: AP7001926 (N) SOURCE CODE: UR/0125/66/000/012/0013/0016

AUTHOR: Gurevich, S. M.; Zamkov, V. N.

ORG: Electric Welding Institute im. Ye. O. Paton,AN UkrSSR (Institut elektrosvarki AN UkrSSR)

TITLE: The effect of flux on TIG welding of titanium alloys

SOURCE: Avtomaticheskaya svarka, no. 12, 1966, 13-16

TOPIC TAGS: titanium alloy welding, flux, shielded arc welding, argon shielded arc welding, TIG welding, alloy welding, arc welding, inert gas welding

ABSTRACT: Several series of OT4 and VT15 titanium-alloy sheet specimens 2—5 mm thick were automatically TIG-welded with the use of fluxes of various composition. It was found that all the fluxes tested lowered the welding current and increased the arc voltage, with the arc power remaining constant. Increased voltage resulted in a deeper penetration and a narrower weld. All these changes are believed to depend on the physicochemical properties of fluxes, especially on their ability to wet solid titanium at high temperatures. The width of weld is also affected by the boiling temperature of the flux. An increase in voltage was found to depend not only on the increased arc length, but also on the increased anode voltage drop. Orig. art. has: 4 figures.

SUB CODE: 13, 11/ SUBM DATE: 29Dec65/ ORIG REF: 007/ ATD PRESS: 5111

UDC: 621.791.856:669.295

Card 1/1

GUREVICH, Solomon, Osipovich; FISHMAN, Abram Aronovich; CHAPSKIY, O.U., redaktor; MOLODTSOVA, N.G., tekhnicheskiy redaktor

[Oil economy of machine-tractor stations and state farms] Neftekhoziaistvo MTS i sovkhozov. Moskva, Gos. izd-vo sel'khoz. lit-ry, 1956. 109 p. (MLRA 10:2)
(Machine-tractor stations)
(State farms) (Petroleum products--Storage)

ROZENFEL'D, Ye.I., kandidat tekhnicheskikh nauk; GUREVICH, S.S., inzhener, mladshiy nauchnyy sotrudnik.

Filtering out harmonics in short wave transmitters. Vest.sviazi 14 no.2:3-6 F '54. (MLRA 7:5)

1. Nachal'nik laboratorii NII Ministerstva svyazi (for Rozenfel'd).
(Radio, Short-wave--Transmitters and transmission)

GUREVICH, S. V.

А. Я. Корнеенко

Анализ сети амплитудной селекции

9 июня

(с 18 до 22 часов)

В. И. Ермаков,
О. В. Ементьев-Чехов

Генератор импульсов типа квадратичный синус.

В. П. Юрченко,
Ю. Е. Корешкова,
Л. В. Афанасьева

Вопросы записи с экранов электронно-лучевых трубок методами фотографии и электрофотографии.

А. А. Гольдин,
Л. А. Таранец

Новая система телевизионного [illegible] и [illegible]

Э. А. Лечина,
Л. А. Чинокова,
В. П. Щербаков

Применение ферритов с ППГ и полупроводников в схеме телевизионного синхрогенератора.

10 июня

(с 10 до 16 часов)

С. В. Гуревич,
В. И. Соколов

Влияние шумов на разрешающую способность в вещательном телевидении.

М. В. Антипин

Определение продольной разрешающей способности передающих телевизионных трубок по двум точкам апертурной характеристики

М. Г. Марков,
Н. Н. Кузнецов

Четырехполюсные магнитные линзы для телевизионных трубок.

М. О. Глезина,
М. И. Цыпин,
В. С. Колобов,
В. П. Шереметьев

Контроль качественных показателей телевизионного тракта во время работы телецентра.

10 июня

(с 18 до 22 часов)

report submitted for the Centennial Meeting of the Scientific Technological Society of Radio Engineering and Electrical Communications im. A. S. Popov (VNORiE), Moscow, 8-12 June. 1959

GUKEVICH, S.Ya.

Labor productivity in enterprises of ferrous metallurgy in southern U.S.S.R. during the prewar five-year plan periods. Izv.vys.ucheb.zav.; chern.met. no.4:181-188 '60.
(MIRA 13:4)

1. Moskovskiy institut stali.
(Metallurgical plants--Labor productivity)

GUREVICH, S.Ye.

Leucoagglutinins in some diseases of the hemopoietic system. Probl. gemat. i perel. krovi 4 no. 10:52-53 O '59. (MIRA 13:8)

1. Iz Moskovskoy gorodskoy stantsii perelivaniya krovi (dir. A.I. Uspenskaya, nauchnyy rukovoditel' - prof. D.N. Belen'kiy).
(HEMOPOIETIC SYSTEM--DISEASES) (AGGLUTININS)

GUREVICH, S.Ye.; BASHLAY, A.G.

Detection of Rhesus antibodies in the blood serum of Rhesus negative donors. Probl.gemat.i perel.krovi no.7:39 '62. (MIRA 15:9)

1. Iz Moskovskoy gorodskoy stantsii perelivaniya krovi (dir. A.I. Uspenskaya, nauchnyy rukovoditel' - prof. D.N. Belen'kiy).
(RH FACTOR) (BLOOD DONORS)

GUREVICH, S. Ye.

Thermoscopic paints. S. E. Gurevich. *Za Lako-krasochnuyu Ind.* 1935, No. 1, 26–6.—The prepn. of HgI_2.CuI and HgI_2.AgI which change color when heated is described.

H. M. Leicester

574

13

10221* **Influence of the Thickness of the Babbitt Layer on Its Wear in Bearings.** (Russian.) S. E. Gurevich. *Doklady Vsesoiuznoi Ordena Lenina Akademii Sel'skokhoziaistvennykh Nauk imeni V. I. Lenina*, v. 17, no. 1, 1952, p. 44-47.

Tests were made on the above. Test equipment is described. Data are tabulated and charted.

GUREVICH, S. YE.

GUREVICH, S. YE. -- "INVESTIGATION OF THE OPERATING PROPERTIES OF BABBITS BN AND B16 IN THIN LAYER BEARINGS." SUB 12 FEB 52, VIM AND VIESKH (DISSERTATION FOR THE DEGREE OF CANDIDATE IN TECHNICAL SCIENCES)

SO: VECHERNAYA MOSKVA, JANUARY-DECEMBER 1952

GUREVICH, S.Ye., kandidat tekhnicheskikh nauk; FILATOV, S.A.

Hydraulic corrugation of thin-walled vessels. Avt.trakt.prom. no.9:27-30 S '54. (MLRA 7:10)

1. ATE-2.
(Sheet-metal work)

GUREVICH, S.Ye.

Determining error in the profile of a cutter with slanted teeth during regrinding. Stan.i instr. 25 no.4:25-28 Ap '54. (MLRA 7:6)
(Cutting tools)

ODING, I.A.; GUREVICH, S.Ye., kand. tekhn. nauk

Investigating notch sensitivity of some steels under cyclic lead. Vest. mash. 39 no.1:30-35 Ja '59. (MIRA 12:1)

1.Chlen-korrespondent AN SSSR (for Oding).
(Steel--Testing)

GURKEVICH, S. YE.

PHASE I BOOK EXPLOITATION SOV/4375

Akademiya nauk SSSR. Institut metallurgii imeni A.A. Baykova

Ustalost' metallov; materialy soveshchaniya po ustalosti metallov 22-24 sentyabrya 1958 g. (Fatigue of Metals; Materials of the Conference on Fatigue of Metals, September 22-24, 1958) Moscow, 1960. 157 p. 3,500 copies printed.

Resp. Ed.: I.A. Oding, Corresponding Member, Academy of Sciences USSR; Ed. of Publishing House: A.N. Chernov; Tech. Ed.: I.N. Dorokhina.

PURPOSE: This collection of articles is intended for mechanical engineers, metallurgists, and scientific research workers.

COVERAGE: The collection contains discussions relating to fatigue failure of metals, fatigue in finished parts, and methods for testing endurance. Included are a critical review of existing theories on metal fatigue, some data on physical regularity patterns, and features of steel failure caused by fatigue. Possibilities for applying a new criterion to the notch sensitivity of metals and high-strength steels are investigated. The mechanism of failure due to corrosion fatigue of metals is discussed along with pertinent experimental data. Also presented are the results of testing the fatigue strength of such metal parts as large-size plates and various parts of machines used in the petroleum industry. Problems involved in testing metals for fatigue are examined. No personalities are mentioned. Each article is accompanied by bibliographic references, most of which are Soviet.

AVAILABLE: Library of Congress (TA460.A377)

Card 4/5

VK/vrc/mas
11-9-60

Gurevich, S. Ya.

PHASE I BOOK EXPLOITATION SOV/3[illegible]

Akademiya nauk SSSR. Institut metallurgii

Issledovaniya splavov tsvetnykh metallov; sbornik 2 (Analysis of Nonferrous Metal Alloys; Collection of Articles, [Nr.] 2) Moscow, Izd-vo AN SSSR, 1960. 204 p. Errata slip inserted. 2,800 copies printed.

Ed.: I.A. Oding, Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House: V.S. Rzheznikov; Tech. Ed.: T.P. Polenova; Editorial Board: A.A. Bochvar, Academician; N.Ye. Orita, Candidate of Technical Sciences (Deputy Resp. Ed.); N.V. Zakharov, Professor, Doctor of Technical Sciences; E.S. Kadaner, Candidate of Technical Sciences (Resp. Secretary); A.M. Korol'kov, Doctor of Technical Sciences; N.V. Mal'tsev, Professor, Doctor of Technical Sciences; and T.A. Sviderskaya, Candidate of Technical Sciences.

PURPOSE: This collection of articles is intended for workers in scientific research institutes, metal and machine works, for teaching personnel, and for students attending schools of higher education.

COVERAGE: This is the second volume in a series of works on nonferrous and [illegible] metal alloys prepared by the Institut metallurgii imeni A.A. Baykova AN SSSR (Institute of Metallurgy imeni A.A. Baykov of the Academy of Sciences USSR), and the Moskovskiy institut tsvetnykh metallov i zolota imeni M.I. Kalinina (Moscow Institute of Nonferrous Metals and Gold imeni M.I. Kalinin). The problems discussed concern the casting and physical metallurgy of nonferrous alloys, the effect of alloying and deformation on the properties of various alloys, and the problems connected with the study of the casting properties and with the plotting of phase diagrams for a number of alloys are discussed. [illegible]

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S/509/60/000/004/014/024
E193/E183

AUTHOR: Gurevich, S.Ye.

TITLE: Fatigue Strength of Thin Alternately Loaded Bearing Alloy Linings

PERIODICAL: Akademiya nauk SSSR. Institut metallurgii. Trudy, No.4, 1960. Metallurgiya, metallovedeniye, fiziko-khimicheskiye metody issledovaniya, pp.170-174

TEXT: In many types of internal combustion engines of modern design, bearings are used which comprise thin-walled steel shells coated with a thin layer of a bearing alloy. For the purpose of design calculations the latter is usually regarded as a constructional material and its endurance limit is taken as the measure of its fatigue strength. However, the usefulness of this criterion in predicting the performance of bearing alloys applied on thin-walled bearings is limited, since the dominant factor determining the fatigue fracture of the bearing alloy is, in this case, played by the bending strains of the steel backing. Consequently, the degree of deformation of bearing alloys should be used as the main criterion in evaluating their relative capacity to

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carry alternating loads. The maximum bending strain of a thin-walled bearing can be regarded as practically independent of the thickness and elastic properties of the bearing alloy layer which is too thin to affect the issue. The bending strain of the bearing will, therefore, depend mainly on its design and on the elastic modulus of the backing material. Consequently, when the comparative fatigue strength of bearing alloy linings of various thickness is determined by bending tests, the deflection of all test pieces should be the same. This procedure was adopted in the course of the present investigation, whose object was to study the effect of thickness of the bearing alloy lining on its fatigue strength. The alloys studied comprised Babbits Б83 (B83), БН (BN), and Б16 (B16). The experiments were carried out on flat bi-metal specimens in a specially designed testing machine shown in Fig.2. One end of the test piece (1) was secured in a stationary clamp (2), the other end being attached to clamp (3) which was vibrated in the horizontal direction by means of a crank shaft (4) and the connecting rod (5). In its central

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portion the test piece was bearing on cylindrical supports (6) and (7), cylinders (7) bearing on the edges of the steel strip uncoated with the bearing alloy, (see section I-I of Fig.2). The amplitude of the vibrating end of the test piece could be changed by varying the radius of crankshaft (4). Symmetrical and asymmetrical loading cycle could be used by moving (in the vertical direction) flange (8) of the electric motor on the shaft of which this flange was mounted. To accommodate test pieces of various lengths, the stand (2) could be moved along the plate (9). By moving the supports (6) and (7) along the plate (9), the length of the free portion of the test piece could be varied, i.e. the bending stress could be changed without changing the deflection of the vibrating end of the test piece. The deflection of the test piece was measured by means of a thin wire pointer attached to clamp (3) which moved in front of a mirror scale (10) and which could be viewed through a magnifying glass. In addition, the magnitude of deflection was checked with the aid of a dial gauge indicator. The maximum bending stresses were developed in the

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test piece at the point at which the strip was bearing on supports (6) and (7), and the changes in the surface of the bearing alloy (formation of fatigue cracks) could be observed through the microscope (11) without interrupting the test. This constituted one of the main advantages of this method of testing, the other advantage being in that the alloy was tested under conditions closely approaching those obtained in service. The results of the present investigation are reproduced in Fig.3, where the number of loading cycles required to cause the appearance of first cracks on the surface of the bearing alloy lining is plotted against the lining thickness (mm), the three curves relating (from top to bottom) to Babbits BN, B16, and B83. It will be seen that with decreasing thickness of the bearing alloy lining, its fatigue strength rapidly increased. Thus, the critical number of loading cycles was increased by a factor of 30 when the thickness of the bearing alloy layer was reduced from 1 to 0.5 mm; by decreasing this thickness from 1 to 0.3 mm, the critical number of loading cycles was increased by approximately 400-450 times.

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The following explanation of this effect is suggested by the present author. For constant deflection of a bimetal specimen (or a composite thin-walled bearing) the maximum degree of the alternating tension-compression deformation in the bearing alloy layer (on its free surface) decreases with decreasing thickness of the layer. Consequently, with decreasing thickness of the bearing alloy layer, the alternate stresses set up in this layer decrease, and this in turn brings about an increase in the fatigue strength of thin bearing alloy linings. For the same reason the nature of the fatigue cracks formed in bearing alloy linings of various thickness was different. It was observed in the course of the present investigation that the rate of propagation of fatigue cracks both lengthwise and crosswise was much faster in thick Babbit layers. Since damage of the bearing alloy layer due to chipping is caused by gradual growth of fatigue cracks, relatively low rate of propagation of cracks in thin bearing alloy linings reduces the rate of chipping and prolongs the useful life of the bearing. Fatigue failures of the bearing alloy linings are caused

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by combined action of alternating stresses due to bending strains of the backing shell and compressive stresses transmitted onto the bearing alloy through the film of the lubricating material. The resulting alternate stresses will decrease with decreasing elastic modulus of the bearing alloy. Consequently, alloys characterized by lower elastic moduli will be subjected to lower stresses and, in spite of their lower endurance limit, may be expected to have longer life. It is for this reason that the number of loading cycles required to cause formation of the first fatigue cracks in lead Babbits BN and B16 was higher than that required for tin Babbit B83, which has higher elastic modulus. There are 3 figures and 4 Soviet references.

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S/180/62/000/003/001/016
E111/E152

AUTHORS: Oding, I.A., and Gurevich, S.Ye. (Moscow)

TITLE: Fatigue strength of high-strength grades of steel

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Metallurgiya i toplivo, no.3, 1962, 10-19

TEXT: This material was presented at a plenary session of the sections of the OTN AN SSSR.
Investigation of the fatigue strength, notch-sensitivity and micro-heterogeneities of high strength steels 30ХГТ (30KhGT), 30ХГСА (30KhGSA) and СП (SP) (vasco-jet 1000) is described. Specimens, heat treated to give various hardness and strength values, were re-tempered (in vacuum) after machining to remove the resultant stresses. In addition to strength, plasticity and hardness testing, the endurance limit and sensitivity to stress concentrations were determined and some micro-structure observations made. All the steels in the maximum-strength state (i.e. with carefully eliminated or distributed dislocations or with dislocation-saturated martensitic structures) had

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Fatigue strength of high-strength.... S/180/62/000/003/001/016
E111/E152

satisfactory plasticity in static tests and impact strength. Cyclic strength criteria showed the following peculiarities: fatigue tests produced a greater scatter of results than obtained in tests at lower specimen strength levels; notch sensitivity was good for the maximum-strength state. However, it was considered that the latter effect should be treated with caution and requires further investigation. Progress of machine construction on the basis of the above high-strength steels needs the participation of all relevant research organizations. Need of extensive testing of the above steels, prior to use, is stressed.
There are 6 figures and 2 tables.

SUBMITTED: March 7, 1962

Card 2/2

GUREVICH, S.YE.

PHASE I BOOK EXPLOITATION SOV/6025

Soveshchaniye po ustalosti metallov. 2nd., Moscow, 1950.

Tsiklicheskaya prochnost' metallov; materialy vtorogo soveshchaniya po ustalosti metallov, 24 - 27 maya 1950 g. (Cyclic Metal Strength; Materials of the Second Conference on the Fatigue of Metals, held May 24 - 27, 1950) Moscow, Izd-vo AN SSSR, 1952. 338 p. Errata slip inserted. 2000 copies printed.

Resp. Ed.: I. A. Oding, Corresponding Member of the Academy of Sciences of the USSR; Ed. of Publishing House: A. N. Chernov; Tech. Ed.: A. P. Gusova.

PURPOSE: This collection of articles is intended for scientific research workers and metallurgists.

COVERAGE: The collection contains papers presented and discussed at the second conference on fatigue of metals, which was held at the Institute of Metallurgy in May 1950. These papers deal with the nature of fatigue fracture, the mechanism of formation

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and growth of fatigue cracks, the role of plastic deformation in fatigue fracture, an accelerated method of determining fatigue strength, the plotting of fatigue diagrams, and various fatigue test methods. New data are presented on the sensitivity of high-strength steel to stress concentration, the effect of stress concentration on the criterion of fatigue failure, the effect of the size factor on the strength of metal under cyclic loads, and results of endurance tests of various machine parts. Problems connected with cyclic metal toughness, internal friction, and the effect of corrosion media and temperature on the fatigue strength of metals are also discussed. No personalities are mentioned. Each article is accompanied by references, mostly Soviet.

TABLE OF CONTENTS:

NATURE OF FATIGUE FRACTURE

FATIGUE TEST METHODS

EFFECT OF THE STRESS CONCENTRATION AND THE SIZE FACTOR ON THE FATIGUE STRENGTH

CYCLIC TOUGHNESS AND INTERNAL FRICTION

S/030/62/000/008/004/005
I003/I242

AUTHORS: Oding, I.A., Correspondent Member of AS USSR and Gurevich, S.Ye., Candidate of Technical Sciences

TITLE: Superstrong metals

PERIODICAL: Akademiya nauk SSR. Vestnik, no.8, 1962, 53-56

TEXT: Great interest is shown in the development of superstrong metals both in the USSR and abroad. The main tendencies in the theoretical and practical approaches to the development of these metals and to their properties are outlined. Opinions are divided and the problems involved have not been fully investigated. Another very urgent problem is the development of new methods and the modernization of the apparatus to allow testing under higher temperatures, more rapid and less uniform loading, higher stresses, and actual service conditions. Superstrong metals will find application in the construction of machinery despite their poor plasticity. The usefulness of superstrong metals has been doubted

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S/030/62/000/008/004/005
I003/I242

Superstrong metals

because of their high sensitivity to notching under cyclic stresses. However, this sensitivity increases only when the hardness rises to 35-40 R_c, and decreases with further increase in strength when the hardness of the metal reaches 50-60 R_c.

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M967

S/124/63/000/001/072/080
D234/D308

AUTHORS: Ivanova, V.S. and Gurevich, S.Ye.

TITLE: Experimental checking of a quick method of determining the fatigue limit

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 1, 1963, 75-76, abstract 1V586 (In collection: Tsiklich. prochnost' metallov. M., AN SSSR, 1962, 110-122)

TEXT: On the basis of an analysis of 32 fatigue curves the authors show that the fatigue limit can be determined with an accuracy sufficient in practice by the method proposed by V.S. Ivanova (Zavodsk. laboratoriya 1960, v. 26, no. 5, 593-598 - RZhMekh. 1961, 1V501). To determine the critical stress it is necessary to test a smaller number of specimens than in constructing a fatigue curve. It is stated that the duration of tests to determine the fatigue limit can be reduced by 100 times. 8 references.
[Abstracter's note: Complete translation]

Card 1/1

S/137/62/000/012/050/085
A006/A101

AUTHORS: Ivanova, V. S., Gurevich, S. Ye.

TITLE: The experimental verification of the accelerated method for determining the fatigue limit

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 12, 1962, 103, abstract 12I634 (In collection: "Tsiklich. prochnost' metallov", Moscow, AN SSSR, 1962, 110 - 122)

TEXT: Results are presented from the experimental checking of the accelerated determination of σ_w (RZhMet, 1960, no. 1, 27635). To use this method for finding σ_w, it is necessary to determine experimentally the stress σ_{cr} which causes the specimen failure at a critical number of cycles, N_{cr}. The subsequent calculation was carried out, using formula $\sigma_w = \sigma_{cr} - \sigma_c$ where σ_c is the cyclic fatigue constant, equal to 6 kg/mm^2 for ferrous metals and 7 kg/mm^2 for non-ferrous metals. The magnitude of N_{cr} may be calculated either from the known physical constant of metal or be determined from one of the fatigue curves (e.g. obtained under bending condition). The number of specimens required for the

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The experimental verification of the...

reliable determination of critical stress, σ_{cr}, depends upon the scatter of experimental data on the cyclic strength of the given material. An analysis shows that in case of a slight scatter of fatigue test data, the value σ_{cr} can be determined, with sufficient accuracy for practical use (± 1 kg/mm^2), from data of tests made with four or five specimens. If the scatter of experimental data is high, the number of specimens should be increased to 8 - 10. However, in this case the duration of tests is considerably reduced, since there is no need to carry out the tests at low stress, close to σ_w, which is 50 - 70% of the total fatigue test duration. The accelerated method was checked on Cu, grade 3.5, 15, 20, and 50 steel, 20 XH (20KhN), 40 XH (40KhN) steel, and B-95 (V-95) Al-alloy with the use of the following 2 methods: 1. Special tests were made with a limited number of specimens, at stresses causing the failure at a number of cycles, both below and above N_{cr}; furthermore the interpolated σ_{cr} value was defined, from which the rated σ_w value was determined. Subsequently, check-specimens were tested to establish the correctness of the calculated σ_w. 2. σ_{cr} was determined from the inclined section of the available Weller curve; the value obtained for σ_{cr} was used to determine the rated σ_w, which was then

The experimental verification of the... S/137/62/000/012/050/085
A006/A101

compared with experimental data. It is shown that in all cases σ_w can be calculated with an accuracy sufficient for practical use from σ_{cr}, determined from data of fatigue tests made with a limited number of specimens (5 - 8). There are 8 references.

L. Gordiyenko

[Abstracter's note: Complete translation]

Card 3/3

S/123/62/000/023/003/008
A004/A101

AUTHORS: Oding, I. A., Gurevich, S. Ye.

TITLE: The sensitivity to notching of high-strength steels at cyclic loads

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 23, 1962, 14, abstract 23A100 (In collection: "Tsiklich. prochnost' metallov". Moscow, AN SSSR, 1962, 169 - 176)

TEXT: Fatigue bending tests were carried out on smooth specimens and on notched specimens of the 30 ХГСА (30KhGSA) structural steel grade to elucidate the dependence of the criteria of the sensitivity-to-notching ratio q and v ($q = \frac{k_\sigma - 1}{k_t - 1}$, where k_σ - effective coefficient of concentration; k_t - theoretical coefficient of concentration, and $V = E\frac{\Delta_{-1p}}{\sigma_{-1p}}$, where E - modulus of elasticity; Δ_{-1p} - index, characterizing the cyclic toughness; σ_{-1p} - endurance limit of the smooth specimens during tensions - compression) on the strength and hardness. It is shown by experiments that, with an increase in strength of the 30KhGSA

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grade steel, the sensitivity to notching rises in the beginning, at σ_b exceeding 125 kg/mm^2 the sensitivity decreases, however. The sensitivity of the steel at σ_b = 186 kg/mm^2 is somewhat lower than the sensitivity at σ_b = 95 kg/mm^2. It is assumed that the cause of the low sensitivity to notching of high-strength steel is its high cyclic toughness. Workhardening does not change the nature of the dependence of the sensitivity to notching on the strength, but merely affects the absolute value of the sensitivity index.

[Abstracter's note: Complete translation]

44965

S/124/63/000/001/066/080
D234/D308

AUTHORS: Oding, I.A. and Gurevich, S.Ye.

TITLE: Sensitivity of high-strength steels to notches during cyclic loading

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 1, 1963, 74, abstract 1V576 (In collection: Tsiklich. prochnost' metallov. M., AN SSSR, 1962, 169-176)

TEXT: In sign-changing bending with rotation of cantilever specimens, smooth and with ring-shaped notch (with radii of curvature 0.980, 0.475, 0.280, 0.190 mm) made of alloyed steel 30ХГСА (30KhGSA) thermally treated for different degrees of hardness (23, 35, and 48 R_c), the authors studied the effect of hardness on the sensitivity of the steel to notches which was estimated by two methods. In the first case the criterion was the factor of such sensitivity q

$$q = (K_\sigma - 1)/(K_t - 1)$$

where K_σ is the effective and K_t is the theoretical coefficient of

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Sensitivity of high-strength ...

stress concentration. In the second case the criterion was the cyclic factor of sensitivity $\nu = E\Delta_{-1p}/\sigma_{-1p}$, where Δ_{-1p} is the characteristic of cyclic viscosity of steel and σ_{-1p} is the fatigue limit in elongation-compression, calculated from

$$\sigma_{-1p} = \sigma_{-1}/f(\nu).$$

In both cases steel of medium hardness (35 R_c) has the highest sensitivity. If hardness exceeds 35 the sensitivity does not increase but decreases, which is associated with an increase of inhomogeneity of structure and lower (owing to a sharp decrease of initial fatigue limit of smooth specimens) value of the effective stress concentration coefficient.

[Abstracter's note: Complete translation]

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ODING, I.A.; GUREVICH, S.Ye.

Effect of work hardening on the cyclic strength at stress concentrations. Trudy Sem.po kach.poverkh. no.5:32-38 '61. (MIRA 15:10)

(Surface hardening)

ODING, I.A.; GUREVICH, S. Ye.

The superstrength metal. Tekhnika Bulg 11 no.9:353-354 '62.

1. Chl. kor. AN SSSR (for Oding).

ACCESSION NR: AT4014044 S/3073/63/000/000/0046/0054

AUTHOR: Oding, I. A.; Gurevich, S. Ye.

TITLE: Cyclic strength and sensitivity to stress concentration in some types of high-strength steel

SOURCE: Prochnost' metallov pri peremenny*kh nagruzkakh; materialy* tret"yego soveshchaniya po ustalosti metallov, 1962 g. Moscow, Izd-vo AN SSSR, 1963, 46-54

TOPIC TAGS: steel, high strength steel, stress concentration, cyclic strength, martensite, bending stress, impact strength, 30KhGT steel, 30KhGSA steel, SP steel

ABSTRACT: There are 3 generally used ways of obtaining high-strength metals: that is, by obtaining non-dislocated metals (filamentous crystals) in the form of "whiskers" and thin films; by obtaining metals with a definite distribution of dislocations (i.e., the polygonal structure resulting from mechanothermal treatment); or by obtaining a martensitic structure saturated with dislocations (thermomechanical treatment). In the present paper, 30KhGT, 30KhGSA and SP (Vasco Jet 1000) steel were subjected to heat treatment followed by mechanical stress, after which the parts were tested for tensile strength, impact strength, bending fatigue, microhardness and other physical properties. All 3 types of steel had satisfactory plasticity at maximal strength with static loads. The results of cyclic tests show-

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ACCESSION NR: AT4014044

ed some peculiarities, however, in that the results of fatigue tests showed greater scatter at maximal strength than at lower strengths (or with weaker types of steel), and the sensitivity to notching was lower at maximal strength than at lower strengths. The sensitivity to stress concentration is therefore low, and all 3 types of steel can be recommended for use in machine parts. Orig. art. has: 7 figures, 1 table and 2 formulas.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 20Feb64 ENCL: 00

SUB CODE: ML NO REF SOV: 006 OTHER: 002

Card 2/2